

NUT 116AL – CASE STUDY #1
Due 11/12/14

Instructions:

Review the pt's medical record below. Answer each question and show your calculations for each, if required. Reference all calculation formulas with the text and page number from PR (i.e., PR p. ____). You must type your answers! If not, questions will not be graded and you will receive 0 points. CS#1 is worth 50 points.

Client Name: ZZ**DOB:** 2/15/89**Sex:** Female**Education:** High school diploma; some vocational school**Occupation:** Office receptionist**Hours of work:** Monday – Friday 9:00 – 5:00**Household members:** Mother 45, younger siblings (18, 20)**Ethnic background:** Biracial (African American and Caucasian)**Religious affiliation:** None**Referring physician:** D. Smith, M.D.**Chief complaint:**

Family noticed that ZZ appears to stop breathing for several seconds several times a night. She is extremely irritable when she gets up in the morning. She reports getting very sleepy while at work and fell asleep at her desk yesterday.

Pt hx:

Pt describes sleep disturbance for the past several years, including: sleeping with her mouth open, cessation of breathing for at least 10 seconds (per episode), snoring, restlessness during sleep, h/o enuresis, and morning headaches. ZZ's co-workers have described deficits in attention span at work. Additionally, she has been overweight since she was born (14# at birth).

Onset: Actual date of onset unclear; pt first noticed onset of the above-mentioned symptoms about 1 year ago.

Type of Tx: None at present.

Meds: None at present.

Smoker: No

Family Hx: Mother: possible gestational DM; grandmother: type 2 DM.

PE:

General appearance: Somewhat tired and irritable 25 yo female.

Anthropometrics: ht: 5'7"; wt: 201#

Vitals: Temp 98.5°F, BP 123/80 mmHg, HR 85 bpm, RR 17 bpm.

Heart: Regular rate and rhythm, heart sounds nl.

HEENT: *Eyes:* Clear; *Ears:* Clear; *Nose:* nl mucous membranes; *Throat:* Dry mucous membranes, no inflammation, tonsillar hypertrophy

Genitalia: nl

Neurologic: Alert, oriented x 4

Extremities: No joint deformity or muscle tenderness, but pt complains of occasional knee pain. No edema.

Skin: Warm, dry; reduced capillary refill (approximately 2 seconds); slight rash in skin folds

Chest/lungs: Clear

Abdomen: Obese

Nutrition Hx:

General: Very good appetite with consumption of a wide variety of foods. Pt's physical activity level is generally low. Pt reports feeling too exhausted to exercise after work. Prefers to watch television or read books. *24-hour recall:*

Breakfast:	2 breakfast burritos, 4 oz whole milk, 4 oz apple juice, 8 oz coffee with ¼ c cream and 2 tsp sugar
Break:	12 oz coffee with ¼ c creamer and 2 tsp sugar
Lunch:	2 bologna & cheese sandwiches (2 slices enriched bread with 1 slice bologna & 1 slice American cheese with 1 Tbsp mayonnaise per sandwich), 1-oz pkg corn chips, 2 mini donuts, 12 oz Coke
Snack:	Peanut butter & jelly sandwich (2 slices enriched bread with 2 Tbsp peanut butter and 2 Tbsp grape jelly), 12 oz Coke
Dinner:	Fried chicken (2 legs and 1 thigh), 1 c mashed potatoes (made with whole milk and butter), 1 cup fried okra, 20 oz sweet tea
Snack:	3 c microwave popcorn, 12-oz Coke

Food allergies/intolerances/aversions: NKA
 Previous nutrition therapy? No
 Food purchase/preparation: Primarily mother
 Vit/min intake: Daily MVI

Dx:

R/O OSA secondary to obesity and physical inactivity

Tx Plan:

Polysomnography to diagnose OSA, FBG, HbA1C, lipid panel, psychological evaluation, nutrition assessment

ZZ's Non-fasting Lab Values

*****CHEMISTRY*****			
DAY:		11/20	
DATE:			
TIME:			
LOCATION:	NORMAL		UNITS
Albumin	3.5-5	4.8	g/dL
Total protein	6-8	6.2	g/dL
Prealbumin	16-35	33	mg/dL
Transferrin	250-380 (women) 215-365 (men)	254	mg/dL
Sodium	136-145	138	mEq/L
Potassium	3.5-5.5	4.2	mEq/L
Chloride	95-105	101	mEq/L
PO ₄	2.3-4.7	4.6	mg/dL
Magnesium	1.8-3	2.1	mg/dL
Osmolality	285-295	288	mmo1/kg/H ₂ O
Total CO ₂	23-30	29	mEq/L
Glucose	70-110	108	mg/dL
BUN	8-18	8	mg/dL
Creatinine	0.6-1.2	0.6	mg/dL
Uric acid	2.8-8.8 (women) 4.0-9.0 (men)		mg/dL
Calcium	9-11	9.2	mg/dL
Bilirubin	≤ 0.3	0.1	mg/dL
Ammonia (NH ₃)	9-33	8	μmo1/L
ALT	4-36	5	U/L
AST	0-35	6	U/L
Alk phos	30-120	99	U/L
CPK	30-135 (women) 55-170 (men)	72	U/L
LDH	208-378	220	U/L
CHOL	120-199	190	mg/dL
HDL-C	> 55 (women) > 45 (men)	50	mg/dL
VLDL	7-32	30	mg/dL
LDL	< 130	110	mg/dL
LDL/HDL ratio	< 3.22 (women) < 3.55 (men)	2.2	
Apo A	101-199 (women) 94-178 (men)		mg/dL
Apo B	60-126 (women) 63-133 (men)		mg/dL
TG	35-135 (women) 40-160 (men)	114	mg/dL
T ₄	4-12	5	mcg/dL
T ₃	75-98	78	mcg/dL
HbA _{1c}	3.9-5.2	5.5	%

Questions:

1. ZZ has been diagnosed with OSA. Define *sleep apnea* and explain the relationship between sleep apnea and obesity.(2 pts)

Obstructive sleep apnea is a disorder in which breathing stops or slows down during sleep. This can result in decreased oxygen in the blood and can briefly awaken sleepers throughout the night. Obesity is associated with soft tissue of the mouth and throat. During sleep, when throat and tongue muscles are more relaxed, this soft tissue can cause the airway to become blocked. Obesity may block some of the airways due to excess adipose tissue on the throat area, preventing breathing.

<http://www.webmd.com/sleep-disorders/sleep-apnea/obstructive-sleep-apnea-causes>

2. ZZ's BMI is 31.49, which indicates that she is obese Class 1. (2 pts)

BMI: $\text{Kg}/(\text{m})^2 \rightarrow 91.2 \text{ kg}/(1.7018 \text{ m})^2 = 31.49$
ZZ is class 1 obese.

3. ZZ's IBW is 135lbs or 61.2kg and her percent IBW is 148.9%. (2 pts)

5'0" 100lbs+ 5lbs per additional inch.
 $100\text{lbs} + (5\text{lbs} \times 7\text{in}) = \text{IBW}$ is 135lbs or 61.2kg.
 $\text{IBW} \% = (91.17\text{kg}/61.23\text{kg}) \times 100 = \text{IBW} \%$ is 148.9%

4. Using the Mifflin-St Jeor equation (from PR), calculate ZZ's kcal needs for weight maintenance. (2 pts) 2366.6 kcal/day to 2535.6 kcal/day

Mifflin-St Jeor Equation = $(9.99 \times \text{weight in kg}) + (6.25 \times \text{height cm}) - (4.92 \times \text{age}) - 161$.
Estimated Caloric Needs = $(9.99 \times 91.17\text{kg}) + (6.25 \times 170.18\text{cm}) - (4.92 \times 25 \text{ yrs old}) - 161 = 1690.4$
1.4-1.5 activity factors ZZ is an office worker and has very low physical activity so $\rightarrow 1690.4(1.4)$ to $1690.4(1.5) = \text{kcal/day}$
2366.6 kcal/day to 2535.6 kcal/day

5. How much protein does ZZ need? (2 pt) 48.9g of protein/day

Protein needs of individual are 0.8g-1.00g of protein/per kg of weight per day.
Using ZZ's IBW which is 61.2kg gives us $61.23 \text{ kg}(0.8) = 48.9\text{g}$ of protein/day

6. How much fluid does ZZ need each day? (1 pt) 2735.5mL

Based on her 24-hr recall, is she receiving adequate inadequate fluid in her diet?

Method I: 30mL fluids/body weight kg.
(29.5735mL per 1 oz of fluid!)
 $(30\text{mL})(91.17\text{kg}) = 2735.5\text{mL}$ of fluid necessary/day
The amount she had including fluid and the fluid in foods is adequate.

7. List 2 nutrients or dietary components (not kcals) that you might be concerned about for this patient, stating the reason for your concern. (2 pts)

Based on ZZ 24 hour recall she is lacking the indigestible carbohydrate fiber. Fiber can promote digestive system and lower blood glucose and cholesterol. Her 24 hour recall also lack healthy fats such as fish, nuts, and olive oil. She needs more monounsaturated fat. Omega-3 fatty acids are necessary for proper brain growth and development. They are anti-inflammatory and may be helpful in the prevention of many diseases.

8. Why did Dr. Smith order a lipid profile and blood glucose tests? What lipid and glucose levels are considered altered (i.e., outside of normal limits)? Evaluate ZZ's lab results. (2 pts)

Her family history and her diet history are some reasons why lab tests were ordered. Her mother had possible Gestational Diabetes, and her grandmother had DM II. Her diet history and 24 hour recall shows a non healthy diet. Her diet has many foods with added sugars, fat, and low nutrition density while she is not getting enough fiber and good fats.

There are some concerns for ZZ. Most of her lab works are within the normal range but at the high end of the normal range. vLDL is also on the higher end, at 30mg/dl (anything within 7- 32mg/dl considers normal). LDL is slightly on the higher end, 110mg/dl (anything <130mg/dl considers normal) and cholesterol was 190mg/dl (anything within 120-199mg/dl considers normal). ZZ's HDL is clinically lower than standard values, at 50mg/dl (normal is greater than 55mg/dl for women). Her non-fasting glucose is in the normal range which is 107mg/dl, this is within normal values, but upper range (70-110mg/dl is considered normal blood sugar). She is not getting enough fiber and this can contribute to increase level of her cholesterol, blood glucose.

9. Write an "ADIME" note for ZZ. Select two nutrition problems and complete PES statements for each within the note. For each PES statement written, establish an ideal goal (based on signs and symptoms) and an appropriate intervention (based on etiology). Include calculations on an attached sheet, including references for equations (PR p.__). (4 pts each = 16 pts)

A:

Female, 25 years old. 5'7" 201lb and BMI 31.5. BP 123/80mmHg she is pre-hypertensive. Non-fasting glucose 107mg/dl, HDL 50mg/dl, vLDL 30mg/dl, cholesterol 190mg/dl, and LDL 110mg/dl. Pt is a non-smoker. Pt is currently not taking medications. Family history indicates Gestational DM in mother and DM II in grandmother. Pt reports feeling fatigued during the day, and restlessness during sleep, h/o enuresis, and morning headaches. 24 dietary recall indicates consumption of large amount of added sugared beverages like soda, refined grains and added fats. She has a low fiber intake. Her diet is very low in fruits, vegetables.

D:

- ZZ's unhealthy diet and eating habits results in obesity. Her BMI is 31.5 which is obese 1. Obesity can cause airway blockage and this result in OSA and one of its symptom is being fatigue most of the time.
- Her 24 hour recall indicates lack of consumption of complex CHO's, indigestible CHO's fiber, fruits, vegetables, and unsaturated/monounsaturated fats it also indicates overconsumption of low nutrient density foods, which are high in refined and added sugars, high in saturated fats, and low in essential vitamins and minerals. This diet can possibly cause the upper end non-fasting blood glucose levels, and low HDL and high vLDL and obesity.

-Physical inactivity can also contribute to these abnormalities in her laboratory values. Physical activity can lower her pre-hypertension.

I:

-Monitoring and evaluation of ZZ's blood work is important.

- Increasing consumption of fiber, vitamins, and minerals and lowering the consumption of high energy foods is recommended. This can be done by increasing the consumption of fruits, vegetables. Choosing white meats and fish instead of red meats that are high in saturated fat and cholesterol.

-Behavioral change is also necessary for losing weight and maintaining a healthy body weight. It is recommended that ZZ be more active physically and set realistic, short term and achievable goals.

M/E:

Talking to the family members and assisting and increasing the knowledge of how they can help the patient achieves her weight loss goals. Motivational interviewing for the patient to assist and encourage her in changing her dietary, behavioral and physical activity patterns for weight loss and improving her health. Giving her a balanced meal plan, that helps her get all the nutrient she needs. Check up every other week to monitor progress, evaluate, and restructure SMART goals for patient.

Maryam Maheri, RD
November 8th, 2014

You see ZZ two months later in the out-patient clinic and she is 4 weeks s/p T&A and is ready and motivated to work on her weight. She has maintained her weight at 200#. She states that her sleeping habits have improved and she is ready to change her lifestyle. She is following no special diet. With adequate sleep she has more energy and she is able to exercise now and is currently walking her dog 10 minutes per day after work.

A 24-hour recall reveals:

Breakfast: (on way to work)	Lunch: (work cafeteria)	Dinner: (at home)
McDonald's Egg McMuffin	Cheeseburger (double)	Collard greens with bacon
Hash browns x 2	Small salad (lettuce, tomato)	Macaroni and cheese
Large coffee	Ranch dressing	Green salad
4 creamers	Large diet soda	Blue cheese dressing
2 packets sugar		1 can soda
	Snack: 1 can soda	

10. If ZZ's goal is to reduce her weight to 160 pounds in the next 6 months how many kcals should she eat each day? (2 pt) (assume that there are 4.3 weeks per month) _____kcals/day

BEE*Activity Factor*Injury Factor=1691 kcal*1.4*1.2=2840.9kcal
 10 min walk does not make a big difference.
 She is 200lb and wants to be 160lb so her weight loss goals is 200-160= 40 lbs, so 3500 kcal*40 lbs=140,000 kcal
 140,000/6 months=23,333 kcal a month/4.3 week in a month=5426 kcal a week.
 5426/7 days=775 kcal/daily.
 2840.9 kcal-775 kcal (deficit to lose weight)=2066 kcal a day
 Total Kilocalorie Requirements (PR, page 9)

11. Do you think that a goal of losing this much weight in 6 months, by diet alone, is a realistic one for ZZ? Why or why not? (1 pt) yes no

No, it is not realistic. Losing a healthy weight is 1-2 Lb per week so the healthy amount she can lose in 6 months is 24-48 lb. for losing weight she needs the combination of 3 things; such as diet, exercise, and behavioral therapy. It's helpful to cut on caloric intake but that is only 1 out of 3 and the other 2 are missing.

12. ZZ is in which stage of the "Stages of Change?" Provide evidence for your choice. (1 pts) Stage # ____, _____.

She is in preparation stage which is stage 3. She is on the stage that she is willing to lose weight. Because she is monitoring her weight not to gain. She is trying to eat more vegetables. She is also drinking diet coke instead of regular one. ZZ mentioned her sleeping habits have improved and began a light exercise with walking her dog. She also mentioned that she is "ready to work on her weight."

13. List 4 dietary (food) strategies that ZZ can incorporate into her eating pattern to make her diet healthier. (1/2 pt ea = 2 pts)

- 1- She can add more fish or nuts to her diet so this way she can get healthy fats.
- 2- She can add more fruits and vegetables to her diet as snacks instead of popcorn.
- 3- Chose another method of cooking instead of frying her foods.
- 4- Replace sugar with honey to sweet her coffees.

14. List 4 realistic ways for ZZ to increase her physical activity, aside from going to a gym. (1/2 pt ea = 2 pts)

1. Walk to work if it is possible.
2. When she goes to work or any other places she can park little farther from her destination and walk there.
3. She can use stairs rather than elevator.
4. She can walk during her breaks and go to farther restaurants to get her food if she is eating out.

15. List 4 behavioral strategies (other than diet/physical activity) that ZZ could use to reduce her kcal intake.(1/2 pt ea =2 pts)

1. She can change her plate's size. Smaller plate means smaller portion.
2. Eating slowly can help her feel full faster.
3. Keeping a Food diary (behavioral changes).
4. Setting short term goals and award herself when she achieves them something like going to a movie.

16. ZZ's long-term (outcome) goal is to weigh 175 pounds; she will need measurable short-term goals as well. Please choose one strategy from each of the questions 14-16 and set a measurable goal for each of these that ZZ can work toward during the two-week period between her appointments with you. Remember...SMART goals. (3 pts)

SMART goals should be measurable, specific, realistic and achievable, and timely.
-Choose fresh fruits and vegetables as snacks. This goal is to increase her fiber intake. Fiber promotes healthier digestive system, lower blood glucose and cholesterol.
-Parking further away from her destination. ZZ goes to work and other places everyday she can either park further or use public transportation to increase her physical activity by walking.
- keeping a food diary can help her see what she has been eating this way she can use simple programs to estimate her calorie intake and see whether or not her current her diet is helping her achieving her goals or not.

17. If the above interventions do not work and ZZ reaches a plateau after losing 20 pounds, what do you think the next appropriate step should be and why? (1 pt)

We should evaluate and think of other strategies that can benefit her. Next step can be physical activity or having short time and realistic goals to motivate her.

18. What is the optimal length of weight management therapy for ZZ? (1 pts)

6 months.

19. ZZ asks about gastric bypass surgery. Is she a candidate for gastric bypass surgery? Why or why not? (2 pt)

No she doesn't need a gastric bypass surgery. She can lose the excess weight with diet, physical activity and behavioral changes.

ZZ's BMI is $90.71\text{kgs}/1.017^2 = \text{BMI } 31.1$ which considers obese I, and does not warrant gastric bypass surgery. Bypass surgery is recommended for patients whose BMI is 40 or greater, or a BMI of 35 or greater with a presence of 1 or more comorbidities.

She has a family history of comorbidities such as gestational diabetes (ZZ's mother) and diabetes Type II (grandmother), but ZZ doesn't have any problem yet although she has a higher normal end of glucose.

20. What would you assess during this follow-up counseling session? (2 pts)

During her next follow up I would ask for another lab test to check the values that raised some concerns before to make sure there is any improvement otherwise we need to make new changes in her diet and physical activity. I would also talk about her diet modification, physical activity, and any kind of behavioral changes she has made between her last appointment till the time I meet her. If she is having any kind of problems I would try to guide her to the right resources to help her pursuing her goals to lose weight.